

ATEA

American Technical Education Association

Journal

“The Role of Technical Education in Creating Companies” Dunwoody Alumni Entrepreneurs

51st ATEA National Conference Panel

Ted Ferrara, Chairman, Standard Heating and Air Conditioning
1977 Graduate of the Refrigeration Program

Ray Newkirk, Chairman, Teamvantage Molding, Inc.
1965 Graduate of the Machine Tool Technology Program

Mike Hanson, President/Chief Executive Officer, Hunt Electric
1985 Graduate of the Electrical Construction & Maintenance Program

Dale Nordquist, President/Chief Executive Officer, GEOTEK
1974 Graduate of the Electronic Systems Technology Program





4	President's Letter	Dr. Rich Wagner
6	Board of Trustee Updates	
8	Outstanding Technical Student Award	2014 ATEA 51st National Conference Award Winner Justin Jackson
9	Outstanding Technical Teacher Award	2014 ATEA 51st National Conference Award Winner Troy Miller
10	Outstanding Technical Program Award	2014 ATEA 51st National Conference Award Winner
12	Silver Star of Excellence Award	2014 ATEA 51st National Conference Award John Deere Company
14	Silver Star of Excellence Award	2014 ATEA 51st National Conference Award Cloud Peak Energy
16	National Conference	2014 ATEA 51st National Conference on Technical Education Highlights and Summaries. Conference summaries, Sandra Krebsbach Ph.D.
21	Region 5 - Save the Date Oct. 9-10, 2014	Gillette College, Gillette Wyoming
27	Editor's Notebook	Nasser A. Razek, Ed.D
28	Reviewed Article	"Reverse Transfer Students and the American Skill Gap" Arrita Summers, Ed.D.
32	ATEA Overview	
35	Corporate Members	Amatrol, American Technical Publishers, CTECS NIDA Corporation, Sandvik Coromant, Realityworks, & NOCTI

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Richard Wagner, ATEA President, Dunwoody College of Technology, MPLS, MN, rwagner@dunwoody.edu

Paul Young, ATEA Vice President, Northern Wyoming Community College District, Sheridan WY
pyoung@sheridan.edu

James King, Past President, Tennessee Colleges of Applied Technology, TBR Nashville TN, jamesking@tbr.edu

Bob Wallace, Executive Committee-finance, Tennessee Colleges of Applied Technology, TBR, Nashville TN, bobwallace@tbr.edu

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Region 6: **Lin Zhou**,
Bates Technical College, Tacoma WA

COVER PHOTO

Entrepreneur Panel at 51st ATEA national conference hosted by Dunwoody College of Technology, Crowne Plaza St. Paul MN, March 26-28, 2014



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Managing Editor

Sandra Krebsbach, Ph.D.
Executive Director
skrebsbach@dunwoody.edu

Editor

Nasser Razek, Ed.D.—University of Dayton,
Dayton OH, nrazek@udayton.edu

Associate Editor

Jane Hildenbrand—Ivy Tech, Kokomo IN,
jhildenb@ivytech.edu

Executive Directors Emeriti

Odin C. Stutrud and Betty Krump

Editorial Committee

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OH; Harry Bowman, Clermont, FL.; Ron Hutkin,
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Q. Jensrud, University of Akron, Akron, OH

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The American Technical Education Association (ATEA) was
founded in 1928 and incorporated as a non-profit professional
education association in 1960. In 1973 the national headquar-
ters was moved from Delmar, New York to Wahpeton, North
Dakota. In 2012 ATEA relocated to the Dunwoody College of
Technology, Minneapolis MN. ATEA is the only autonomous and
non-affiliated international association devoted solely to the
purposes of postsecondary technical education. ATEA is the
leading association for the postsecondary technical educa-
tor with emphasis on professional development. Educators
and individuals from business and industry come together at
conferences to discuss the latest trends and developments in
technology. The organization is dedicated to excellence in the
quality of postsecondary technical education with emphasis on
practical teaching ideas and best practices.

Spring 2014 | Vol. 41 No.1

From The Executive Director



ATEA Journal is proud to announce the
national award winners. Congratulations to
Justin Jackson, Outstanding Technical Student;
Troy Miller, Outstanding Technical Teacher;
Laura Chambers, first finalist for Outstanding
Technical Teacher; and the Nuclear Program
at Three Rivers, Norwich Connecticut,
Outstanding Technical Program. This year there
are two Silver Star of Excellence Award winners,

John Deere Company, and Cloud Peak Energy. The areas of business
were different and each met the criteria for the award. The award is
given in conjunction with the National Technical Honor Society.

The cover story is the national conference panel of CEO's and
business owners, all with Dunwoody College of Technology alumni.
Their insights are forthright and provide road maps for future
entrepreneurs who will start or own a technically based company.

The collective message from this ATEA Journal is technical education
looks to the future, asks what does it mean and how do we integrate
the new technology into our programs. A feature is "Ten Trends
Transforming Technical Education" by futurist Jack Uldrich and a
responding panel on how four of the trends are or will be integrated
into technical education programs.

Northern Wyoming Community College District, Gillette,
Wyoming, campus invites you to Gillette, October 9-10 2014, for the
Region 5 Conference. There will be workshops on new technologies,
effective methods for tech-ed teachers, the latest Perkins news, and
approaches to securing grant funding from Department of Labor
(DOL) and National Science Foundation (NSF).

President Tom Snyder, Ivy Tech Community College, extends an
invitation to the 52nd ATEA national conference in Indianapolis and
hosted by Ivy Tech Community College, April 15-17, 2015. "Save
the Date" is on the back cover.

Consider writing for the *ATEA Journal*. There is a reviewed and
refereed section that is academically recognized. Three Editorial
Committee members review the article. Dr. Nasser Razek, Editor,
explains the process in *Editor's Notebook*.

ATEA is a voice for your work and the role of technical education
on YouTube: AmericanTechnicalEdAssoc and twitter @atealine.org.
Send your photos, videos and updates. Both are linked on the ATEA
homepage www.Ateaonline.org. Watch for ATEA on Facebook.

Best regards,

Sandra Krebsbach, Ph.D.
Managing Editor

president's letter



Commencement 2014, it is a time for celebration, renewal, and revitalization as we participate in graduation celebrations across our nation. As technical educators,

we enthusiastically watch as the Class of 2014 leaves our campuses. Through the programs offered at our colleges, our graduates have learned what is necessary for an immediate job and now represent the skilled workforce needed to fuel today's economy and create tomorrow's technology. I always stand in awe of the daunting tasks that lie ahead of our graduates. At the American Technical Education National Conference in March, we heard from four graduates of technical education programs that are now entrepreneurs, business owner, and venture capitalists. Along with a key note speakers and panel discussion about technology, we saw the perfect intersection of technology and education. An intersection that is full of traffic and the flow of that traffic is critical to the economic and societal health of our

cities, our regions and, I dare say, our nation. Traffic that when directed correctly takes us on a road that leads to workforce development, economic development, and access to good paying jobs and a middle class lifestyle.

Never before has the role of technical education been so relevant and so essential. Today, career and technical education is at the center of a national dialogue on the "skills gap" as industry leaders lament about the current and future shortage of skilled workers. At a recent strategic planning session for Minnesota's Governor's Workforce Development Council, the facilitator talked about the urgency isn't to keep our states vibrant it is to keep our nation vibrant. Placement rates at technical colleges continue to climb. At Dunwoody College of Technology we place over 97% of our graduates in the field for which they were trained. But for every graduate placed we have hundreds of job requests going unmet. A phenomenon I am sure you are experiencing. Industries need skilled technicians and the pipeline is not keeping up with demand.

Now, juxtapose technological changes onto the skilled workers shortage. At our national conference we heard about the effect of technology doubling every eighteen months and

the impact this doubling has as technologies mature. Our speaker talked about cell phones in the 1970's, a rare and expensive device that could only make and receive phone calls and today these devices are used to do our banking, answer our e-mails and are close to rendering desk-top computers irrelevant. Now, imagine how technology impacts all of the industries we serve. Automobile mechanics that work on cars that contain more computing power than an Apollo spacecraft, additive manufacturing processes that print components, 4 D printing that uses human cells to produce tissues and in the future will create organs and body parts, and building information modeling (BIM) software that is revolutionizing the construction industry, along with composite materials, alternative energy vehicles and other technologies that change industries at an ever accelerating pace.

How do we meet this national challenge? Through career and technical education programs that teach students the skills needed for immediate and gainful employment and that prepare them with the capacity for lifelong learning. Lifelong learning is a term often overused and perhaps cliché, but our students will need to understand, learn and adapt as technology continues to change their industries and their tools. These changes will change the skills necessary to succeed in an industry and they will be different than the skills a student learned while in college.

I view this great challenge as a defining moment for career and technical education. We've seen the best practices of industry and education coming together to create programs to accelerate students into the workforce and then provide stackable credential. These programs provide immediate employment and formal "lifelong" learning to help students grow personally and professionally. We've seen technical educators respond from Tennessee to Minnesota to Alabama, in Wyoming, Idaho and Washington, everywhere across our great nation technical educator are stepping forward, not balking in the face of great challenges, but saying yes we can, we can meet this challenge.

To all of you that have made this your life's work, thank you. The American Technical Education Association will be here to help you by sharing best practices, by bringing people together with common problems to find the best solutions, and by being a nexus for ongoing dialogue to make sure our programs meet today's challenges and are ready for tomorrow's technologies.

Dr. Rich Wagner is President of the ATEA President, Dunwoody College of Technology, Minneapolis, MN

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Thank you to Dr. Larry Moser for his service on the ATEA Board of Trustees serving as President from 2010-2012 and President Elect 2007-2010. Larry has retired from the ATEA Board of Trustees.

Appointed to the Board of Trustees for a 3 year term



DR. BRYAN ALBRECHT

Dr. Albrecht is a distinguished professional in technical, technology and STEM education, presenting throughout the United States and seven foreign countries. Bryan has served on over 60 local, state and national boards that represent emerging technologies, education economic and workforce development. Gateway Technical College serves 24,000 students throughout southeast Wisconsin and is nationally recognized for their innovative business and industry partnerships. He holds three degrees from the University of Wisconsin-Stout and a doctor of education from the University of Minnesota.

MARY KAYE BREDESON

Mary Kaye Bredeson is the Executive Director for the Center of Excellence (COE) of Aerospace and Advanced Manufacturing at Everett College, Everett Washington. She was appointed in 2003. Mary Kaye focuses on a targeted industry that drives the state's economy and is built upon a reputation for fast, flexible, quality education and training programs. The COE provides a central point of contact for industry employers to share their workforce needs with all 34 community and technical colleges within Washington state as well as other education and training providers. The COE for Aerospace has been very successful in implementing numerous state and federal Department of Labor grants focusing on building training capacity and transitioning students into high demand aerospace and advanced manufacturing jobs.

Through her travels to Dubai, Farnborough and the Paris Air Show with the governor's delegation, Mary Kaye has made vital connections that have furthered her work within the state. Most recently, Mary Kaye was awarded the Dr. Idahlynn Kane Exemplary Leadership Award at the 2014 Chair Academy Annual Conference in Mesa, Arizona.



DR. BETTY REYNARD

Dr. Betty Reynard, Vice President for Academic Affairs and Workforce, Lamar Institute of Technology, Beaumont, Texas. Named President of Lamar State College Port Arthur, Port Arthur, Texas. Dr. Reynard will begin her presidency on September 1, 2014

Dr. Reynard began her career as a dental hygienist with a two year degree from Lamar University. She was employed as a dental hygienist in private practice for several years until she began teaching in higher education. Dr. Reynard has held leadership positions both nationally and regionally in dental hygiene accreditation and higher education. She served as a member of the Dental Hygiene Advisory Committee for the Texas State Board of Dental Examiners and as a member of the Undergraduate Education Advisory Committee to the Texas Higher Education Coordinating Board. Dr. Reynard has teaching experience as a principal instructor at Lamar Institute of Technology in Dental Radiology, Dental Materials, and Primary Preventive Care. She holds a doctorate in higher education administration from the University of Houston and a masters, bachelor of science and associate of applied science degrees from Lamar University.



Re-elected Board Members



AMI N. ERICKSON, PH.D.

Dr. Erickson is the Dean of Science, Math, Agriculture and Culinary at Northern Wyoming Community College District. She has served as both an educator and administrator at NWCCD for the past 11 years. She is dedicated to providing and supporting educational opportunities that allow students to gain work-related skills and the ability to apply their knowledge and skills to solve problems and think creatively. She has recently graduated from Leadership Wyoming and has also completed professional training in Appreciative Inquiry and the Foundation Leadership Academy through the Chair Academy. Dr. Erickson is delighted to serve a second term on the Board of Trustees for ATEA and is anxious to support the continued growth and impact that ATEA has on technical education in higher ed.



RON LANGRELL

Dr. Langrell has more than 30 years of higher education experience, including post-secondary service as chief academic officer, chief workforce and economic development officer, and chief student affairs officer. He began the presidency at Bates Technical College in 2012. The multi-campus college is one of the oldest public technical colleges in the state. The College owns and operates KBTC Public Television, an Emmy Award-winning PBS affiliate. Dr. Langrell serves on many community boards including those that represent workforce and economic development. He holds undergraduate and graduate degrees from University of Idaho, and a doctorate of higher education leadership from Florida State University.



KEITH MCCLANAHAN, ED.D.

Dr. Keith McClanahan is the Director (Dean) of the Advanced Technology and Allied Health Division at Arkansas State University-Beebe. He came to ASU—Beebe from Bryce Corporation. Prior to that, Keith served for twenty-one years in the U.S. Marine Corps. His service included three years of teaching Electrical Engineering and Systems Engineering at the Naval Academy. As an Operational Test Project Officer he tested UAVs (Unmanned Aerial Vehicles) and the Joint Tactical Information Distribution System (JTIDS). Keith left the Marine Corps at the grade of Major (O-4).

He serves on the North Central Arkansas Workforce Investment Board, the Arkansas Association of Two Year Colleges Workforce Training Consortium and has served on Arkansas Science & Technology Authority Manufacturing Extension Task Force on Advanced Technology.



JOHN H. ZEIT

John is retired after 30 years from Stark State College in Canton Ohio where he still teaches part time in the Civil Engineering Technology Program. He is the CEO and Architect for the Zeitgroup, Ltd. in Kent, Ohio. He holds a Bachelor of Architecture from Kent State university and a Masters of Legal Studies from Kaplan University. He co-authored an on-line building materials text and served on Transfer Assurance Guidelines Committee for the Ohio Board of Regents. A longtime member of the American Technical Education Association, John was awarded the Outstanding Technical Teacher of the Year award for his region in 1997 and has presented at numerous conferences.

student

Outstanding Technical Student Award 2014

ATEA's 2014 Outstanding Technical Student is Justin Jackson. He is in the Heavy Equipment and Maintenance program Central Lakes College, Staples, Minnesota campus. As Dean Mike Mire, North Idaho College, and Chair of the ATEA awards nominating committee said, "Justin received the award for his ability to start again in more than one area of his life." Justin had several jobs over a twenty year period, one for eleven years until a new owner came on board. He had tragedies in his life. He lost his mother when he was a senior in high school; as an adult his home was damaged by fire; and he and his wife lost a teenage son.

Justin chose to keep going by using his skills and work ethic from other jobs and adding new knowledge in operating heavy equipment, skid loaders and forklifts. John Maleski, Heavy Equipment Program Faculty, wrote that Justin came with three traits that cannot be taught: pride in his work, desire to learn, and a great attitude.

He is active in the Heavy Equipment Club, serving as president for two years. He holds a Commercial Driver's License (CDL) and has tutored 35 students to help them obtain their CDL. He participates in the Student Senate and speaks on behalf of his college at the Minnesota Legislature.

Justin Jackson exemplifies many of our technical students throughout the nation and the ATEA Board of Trustees is proud to recognize him.



L-R Rich Wagner, President ATEA Board of Trustees and President of Dunwoody College of Technology; Justin Jackson, Outstanding Technical Student; Dr. Mike Mires, Chair Awards Committee; Dean of Professional, Technical and Workforce Program, Northern Idaho, Coeur d'Alene, ID



L-R Sandra Krebsbach, ATEA Executive Director; Krista Jackson; Justin Jackson Outstanding Technical Student Award recipient, Central Lakes College, Staples MN; Dr. Mike Mires, Chair Awards Committee; Dean of Professional, Technical and Workforce Program, Northern Idaho, Coeur d'Alene, ID

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Tennessee Technology Centers
Tennessee Board of Regents



Dr. Amy Erickson
Dean of Science, Math, Agriculture
and Culinary,
Northern Wyoming Community
College District
**Appointed to the Committee
for 2014**

Outstanding Technical Teacher Award 2014



L-R Rich Wagner, President ATEA Board of Trustees and President of Dunwoody College of Technology; Troy Miller; Troy Miller, Outstanding Technical Teacher Award, Gillette Campus of Northern Wyoming Community District, Gillette WY; Dr. Mike Mires, Chair Awards Committee; Dean of Professional, Technical and Workforce Program, Northern Idaho, Coeur d' Alene, ID

Troy Miller, Welding Technology Instructor, Gillette College, Northern Wyoming Community College District, Gillette, Wyoming is ATEA's Outstanding Technical Teacher 2014. Troy is known as a solid instructor, mentor and club advisor who is equally effective with students with prior experience and with students with no experience. Troy took a "struggling" welding program and transformed it into a competitive advantage for area employers who hire his students. He connects with industry partners to update the program outcomes to meet their needs. His program stays current on American Welding Society (AWS) certifications and trends.

He instills pride and professionalism in welding technology. His students competed in SkillsUSA Welding Fabrication—winning first place in Wyoming and 2nd in the national competition in Kansas City, Missouri. Troy is the advisor for both the American Welding Society Chapter and SkillsUSA chapter. Students raise money to attend the national Fab Tec show. He models community engagement through volunteering the veteran community educational projects and service projects.

Outstanding Technical Teacher Award Finalist



L-R Rich Wagner, President ATEA Board of Trustees and President of Dunwoody College of Technology and Laura Chambers, ATEA Outstanding Teacher Finalist, Ogeechee Technical College, Statesboro GA.

Laura Chambers, English instructor, Ogeechee Technical College, Statesboro, Georgia, was awarded finalist for her innovative teaching strategies such as instruction on an accelerated timeline and involvement with business and industry. She engages her students and works across the disciplines with online English courses. In addition to teaching Laura makes the real life connection between liberal arts and technical skills. She owns a trucking company business and has been a truck driver earlier in an career. She holds both a Bachelor of Arts degree and a Master of Education from Georgia Southern University, Statesboro, Georgia.

program

Outstanding Technical Program Award Winner 2014

Nuclear Engineering Technology, Associate in Science (AS)

ATEA has awarded the Nuclear Engineering Technology Associate of Science (AS) and Dr. James Sherrard and Three Rivers Community College the Outstanding Program Award for 2014. This program continues to excel with an \$85M modernization and centralization of academic facilities, resulting in the creation of two new state-of-art nuclear laboratories. Nuclear

programs are in health care as well energy production. There is a new health physics lab using \$250,000 of the state monies and the nuclear lab rehabbed for the \$500K one-of-a-kind-in-the-world nuclear reactor simulator. The simulator serves as the capstone event for the degree program.

The Nuclear Engineering Technology program has decades of documented history of quality beginning with Technology Accrediting Commission (TAC) of Accrediting Board of Engineering and Technology (ABET) accreditation in 1989 and has remained continuously accredited since that date.

Until 2010 Three Rivers Community College had the only two year accredited program. The accreditation is now Engineering Technology Accredited Commission (ETAC) of ABET.

This program was built with the support and engagement of Dominion Nuclear with funding for scholarships, equipment, internships, placement and curriculum. It has positioned the State of Connecticut and the region to move forward with the renewed interest of nuclear energy.



L-R Rich Wagner Ph.D., President of ATEA Board of Trustees, Dr. James Sherrard, Chair Nuclear Programs, Three Rivers Community College, Norwich CT; Dr. Mike Mires, Chair Awards Committee; Dean of Professional, Technical and Workforce Program, Northern Idaho, Coeur d'Alene



Nuclear Regulator Commissioner William Magwood IV (center) visits the ATEA technical program of the year Associate of Science in Nuclear Engineering Technology) at Three Rivers Community College in Norwich, CT. Dr. Sherrard (far left) with students, Trad Horner, Assistant Director of Training Dominion Nuclear Connecticut (2nd row 2nd from the left)



**2014 51st National Conference
on Technical Education
St. Paul, Minnesota**



Silver Star of Excellence Award 2014

John Deere Company

John Deere Company was awarded the Silver Star of Excellence for their comprehensive approach to training technicians. In 21 sites in North America, John Deere connects their dealers to colleges and technical institutes to produce qualified service technicians using John Deere state of the art instruction, equipment and training aids. John Deere Company was nominated by Arkansas State University—Beebe.



L-R James King, Board member of National Technical Honor Society, Vice Chancellor Tennessee Board of Regents, Jennifer Badding, Manager of College Partnerships, John Deere, Dr. Keith McClanahan, Director of Allied Health and Technology Arkansas State University--Beebe

John Deere is a model for collaboration between the John Deere dealer and the college in working with the colleges to identify what equipment is needed in their area. The Manager of College Partnerships, arranges for the equipment to be entrusted to the college for specified time periods. New state of the art equipment is rotated through these 21 colleges—from the colleges it typically goes to a local dealer for resale.

The equipment provided integrates computer controls, geospatial positioning systems (GPS), cellular networking, remote diagnostics, and a multitude of sensor controls in the equipment.

John Deere contributes to training through access to online curriculum for both the students and for the instructors at no charge to maintain this highly advanced agricultural and heavy equipment. Students learn to repair various components of machinery, such as diesel engines, electrical systems, power trains and hydraulics.

Students in the program often have jobs with the Dealers and rotate from the college to the dealer for internships.

JENNIFER BADDING, MANAGER OF COLLEGE PARTNERSHIPS, JOHN DEERE COMPANY

Excerpt of her comments at the award luncheon:

John Deere started the program of training service technicians twenty-five years ago. Students in the program are ready to enter the workforce as entry level service technicians with an associates degree. Students need the technical skills and also the communication skills so they can communicate effectively with customers and other dealership employees. John Deere started with two programs in the United States and today have 21 programs in North America, 5 in Canada and 16 in the United States. John Deere is expanding the program across the globe.

Who would have believed a combine harvesting corn can signal to a grain cart, 'tractor come out so I can unload on the go.' The combine can also tell the tractor what speed to go and to slow down at the end of a row, raise the implement, turn and change speed.

Students have access to John Deere distance learning that supplements in classroom materials. Instructors attend John Deere University to maintain the high standards of instruction.

John Deere truly believes in career and technical education. Our students have a high placement rate at dealerships and high upward potential in our John Deere organization. We have several students who graduated from this program and are in management positions.

The program would not be possible with partners in the 21 college organizations, the students and our John Deere Dealerships.

I want to especially want to thank Arkansas State University-Beebe for nominating us for this award. It is a pleasure to work with the faculty, students and administration at ASU.

Congratulations to all of the award winners. It is great to be in a roomful of people supporting career and technical education.

Group photo: students in John Deere Program, Arkansas State University-Beebe.



2014 Silver Star of Excellence
John Deere Company



silver star of excellence

Silver Star of Excellence Award 2014

Cloud Peak Energy

A TEA and the National Technical Honor Society awarded the Silver Star of Excellence to Cloud Peak Energy nominated by Northern Wyoming Community College District with colleges in Sheridan, Gillette and Buffalo, Wyoming.

Cloud Peak Energy is one of the largest U.S. coal producers and the only pure-play Powder River Basin coal company. Two of their coal mines are located near the Gillette campus and one near Sheridan.

They specialize in low sulfur, subbituminous coal. Cloud Peak provides fuel for approximately 4% of the nation's electricity. They are one of the safest coal producers in the nation. With 1700 employees, the company is widely recognized for performance in safety and environmental programs.

Cloud Peak Energy is an industry partner to Gillette and Sheridan campus by providing technical assistance in the form of internships, student co-ops, scholarships, and advisory board members. They serve on Advisory committees including; Diesel Technology, Industrial Electrical, Mining Technology, and Welding Programs. They donate funds for scholarships which benefit general education students as well as career and technical students. They support co-op programs with tools, competitive pay with working options for full time employment upon graduation, and financial incentives of \$2500 a year scholarships. Cloud Peak encourages degree completion with employment opportunities to follow the course of study.

Cloud Peak donations include an MG dragline, (pictured) assisted in the instruction of repairs and are building a control panel for the MG set that will allow the set to run and simulate the entire control system of the dragline.

They have donated steel to the welding program as well as consumables: electrodes, cutting tips, welding tips, drill bits and shielding gas which provides more opportunities for students to practice and develop proficiency. This support has produced SkillsUSA 2nd place winner in the national Welding Fabrication competition.



L-R James King, representing the National Honor Society Board member of National Technical Honor Society and Vice Chancellor Tennessee Board of Regents, David Traverso, Systems Manager, Gillette Wyoming, Marty Brown, Maintenance Technician Instructor, Gillette Wyoming

Cloud Peak supports the Mining Tech Program with instructors for the Mining Engineering Course. Cloud Peak provided a Certified Welding Inspector/Certified Welding Educator to fill in for an instructor gap in the welding program until one could be found.

Cloud Peak Energy understands and supports the dual goals of Northern Wyoming colleges: program completion and job placement. They have a practice of hiring graduates for full time positions—which encourages degree and certificate completion. They tell students they have a full time job, but finish then come to work. They hired 13 full time employees from Gillette College in 2013.

Accepting for Cloud Peak Energy

David Traverso, Systems Manager, Gillette and
Marty Brown, Maintenance Technician Instructor, Gillette

Photos to the right: David Traverso acceptance comments, Students in training course, Cloud Peak Energy Operations in Gillette Wyoming and wildlife on reclaimed land.



2014 Silver Star of Excellence
Cloud Peak Energy



Cover Story

“The Role of Technical Education in Creating Companies” Dunwoody Alumni Entrepreneurs

March 27, 2014



Ted Ferrara
Chairman, Standard Heating and
Air Conditioning



Ray Newkirk
Chairman, Teamvantage
Molding, Inc.



Mike Hanson
President/Chief Executive Officer,
Hunt Electric



Dale Nordquist
CEO and President of GEOTEK



Richard Wagner, Ph.D.
Moderator

Ted Ferrara Chairman, Standard Heating and Air Conditioning

I grew up in a family that owned a heating and air conditioning business in the Twin Cities. Since I was 11, I spent the summers working in the business. My career trajectory was determined early. I loved the business. When I was in high school there was an expectation that I would go on to postsecondary education. The decision was to look at the School of Engineering at the University of Minnesota, a fine school, or Dunwoody College of Technology. I chose Dunwoody for both good reasons and a ‘bad’ reason. At the time was it was the most direct way of getting what I wanted in my education and that is to learn what we did for our customers in terms of service and products and to understand the technology of our business. The ‘not so good’ reason was I was a terrible student in high school, not at all academically oriented. I looked at the four year engineering program and did not want to take all of those courses that I did not want to take in high school. It is an extension of high school, only worse.

If I go to Dunwoody, I am going to learn real stuff; practical knowledge, applied technology. Something I was interested in. I got way more than I bargained for; I learned I could be successful. A spark was lit in me that I began to read books on my own and study on my own and just have a thirst for knowledge.

I graduated from the Refrigeration and Repair Program in 1977, went on for a Bachelor of Arts degree at a public state school in Minnesota. I am a big believer in liberal arts education.

Then got an MBA from a private institution in another state. Then I got another technical degree, bachelors in Applied Mathematics. My high school teachers would find it hard to believe that I would go on to have four postsecondary degrees.

I am currently the Chairman of the Board of Trustees at Dunwoody.

Ray Newkirk, Chairman, Teamvantage Molding, Inc.

Before I start, what I would like to say is, the jobs you all do are extremely important to us in the industry. I appreciate the commitment you all make to build the resources of the people we need to succeed.

I grew up on a farm in southern Minnesota; went high school down there. I met a gentleman who was a tool maker. I wanted to build cars. He worked in Rochester and was building cars. I thought this is what I want to do.

My goal very early became to get to Dunwoody to learn the tool making trade. I started in business right out of trade school, not knowing anything about business. I started going to various night courses at the University of Minnesota and at St. Thomas University (private regional in St. Paul/Minneapolis). I took Dale Carnegie courses and courses at numerous other places. I joined civic organizations.

In 1965, I was twenty three years old and started Tape Inc. I built that company up to about 135 people. Ended up building automation equipment primarily for the auto industry. We had

employees in Detroit. It was stressful. A company in Great Briton decided they wanted it worse than I did. I ended up selling it in 1987. I tried to retire in Arizona. In 1993 I bought TeamVantage. We are a contract manufacturer for the medical industry and the defense industry. In 2003 I bought another company Custom Mold and Design from a gentleman who went to school at Dunwoody. He built a real nice company that had been "tipped upside down." I bought it and we now employ about 80 people in that company.

I served on the Dunwoody Board of Trustees for 10 years. I have been a bank director for almost 35 years.

**Mike Hansen, President/Chief Executive Officer,
Hunt Electric**

I will give you my educational background, then information on the company I own and run.

I was a non-traditional student at Dunwoody. I got my liberal arts degree first. I went to the University of Minnesota and got degree in history, a minor in English and a minor in political science. Not necessarily where you find a lot of electrical contractors getting their education.

Getting a job with a liberal arts degree was a bit of a challenge. I was encouraged by my father to get a "hands on" degree. He encouraged me to go to Dunwoody, which I did. I graduated from Dunwoody in 1985. I now had spent seven years in postsecondary education. I needed to find a job and I did. I started with Hunt Electric. Twenty nine years later I am the majority owner and CEO. I started as a management trainee. Worked my way through a series of jobs in the company. I took over as president in 1995. I, and four others, bought the company in 2001.

Subsequent to my education at Dunwoody, knowing that I want to run a business, I needed more knowledge so went back to the Carlson School (U of Minnesota) and got a MBA in finance.

Hunt Electric in 1995 did \$50 Million in business and now does \$250 Million. We do work across the United States. There are about 150 management positions and 600 to 800 electricians. The company has grown. We have great employees and partners. I could not have done what I have done without all of the educational experiences I had. The liberal arts are important to me. What I learned at Dunwoody in the Electrical Construction and Maintenance Program is very important. It is what we do as a business. The MBA gave me the pieces I needed to run a large business. It has been a lot of fun and continues to be a lot of fun.

Dale Norquist, CEO and President of GEOTEK

I graduated from Dunwoody in 1974 in the industrial electronics program. I grew up on a farm in Southern Minnesota. I chose a technical education because I was too impatient to sit through lectures. I actually used that program and that knowledge got me my first job at Eastman Kodak as an electronic technician fixing things. One of the advantages of coming out of a technical school, you are immediately relevant. The first day I started I was working on things. I compare that to my sons' education with business degrees. You are immediately qualified to learn what to do because you are not relevant with a business degree. This is one fundamental building block of a technical degree verses a four year degree.

I am a contradiction. I hated sales people and I became a sales person. About two years after I graduated I was in technical sales, microelectronic sales, very high tech. I actually attended Stanford University on technology, an executive training, an emersion program that opened my eyes and ears to a lot of things to want to continue to learn. I became a corporate officer and vice president of sales at twenty eight. I stayed in that career for twenty five years in international sales as well as domestic sales. Learned the expertise of turning around companies and strategically repositioning companies.

I did not want to run a company and I proceeded to run a company in 2007. That is what I have been doing. I was the CEO of Zabreba Systems, a small public company. We sold the company. I got into my second CEO position four years ago at GEOTEK in Rochester, Minnesota. We have grown that from \$18 million to \$40 million and grown our employee base from 50 to 150 employees. We make composite fiber glass beams. Cross arms on top of electric utility poles that hold up electrical conductors that have hundreds of thousands of volts. So I still have an association to my background.

**Rich Wagner, President ATEA, President Dunwoody College
of Technology, Moderator**

Why do you think our technical college graduates start companies?

Ted Ferrara

A technical base can position a student to see opportunities. They are working somewhere, they see an opportunity to do the job better, and they are technically prepared. This works with a start-up. Those of us who came into the business to run the business, there is a shift to seeing business as science. The improvement in business comes along with looking at it systematically, looking at it quantitatively and measuring it and improving it. These are

in many ways the basics that are also learned in technology curriculum. You are not afraid of quantitative thinking as business becomes more science based.

Ray Newkirk

I had several jobs working my way through school. I found there was someone with more seniority who got the real interesting work. The real motivator for me was to continue to learn. For me it was the desire to continue to learn the trade. I have created in my business a culture of learning

Mike Hansen

Hunt Electric, we have 20 or 25 Dunwoody graduates in the management team. Five of the eight of my partners are Dunwoody grads. There is something about people who think about education as more than the lecture. There is a level of ambition and maybe impatience. Maybe it is the level of wanting to get out and use your hands that leads people to rise to the top. They are motivated impatient and ambitious.

Dale Norquist

One of the things that positions technical schools to produce students who own and build companies is business is formed around one of two things: a service or a product innovation. A lot of what is taught in technical schools gives someone a specific craft or trade, HVAC or Auto Mechanics. That is a service and a business. So if you can graduate, be knowledgeable about that service or discipline, you can hire others, you can lead others and build a whole business around it. Those types of trades tend to be small business in the US.

Rich Wagner, Moderator

As you moved from a technician to owner operator of the business and managing people what were the gaps?

Ted Ferrara

Gaps were huge going from the technical position into administration. I realized I did not know anything about keeping track of making money. I took an accounting class. As I got into the administrative operations of the business, the people I was working with had a different vocabulary. I decided to get more broadly education. I wanted to learn what it means to read, think, communicate and write. That is when I pursued my liberal arts degree at night. I would make the argument, if you want to be a success in business, get the rudiments down of accounting and a couple takes and take a really good literature class. If you can read the situation, read the people and the plot,

you will see what other people do not see. I got the liberal arts degree. I studied business with a graduate degree in business and now I am back filling with an applied mathematics degree.

I remind myself of how far I have come. The gaps came at different times, when I was ready to fill them. Not everybody is ready to learn at the same time. I was not ready in high school and through time I became ready, felt the need, and thankfully, there were people like you who were ready to help me learn. I had some great educators over the years who, not only educated me, but motivated me to go further. We have a great infrastructure here in the Twin Cities for adult education.

Ray Newkirk

What are the gaps getting from the technical to the managerial? The two years in the trade school are necessary. There isn't time to go into the business school aspects. Once you start a business it is necessary to take those business classes. I think the technical side of their education is extremely important. For the few who go into business for themselves that is a separate education.

Mike Hansen

The biggest gap I experienced when I finished Dunwoody, I had the great combination of liberal arts and the technical skills. As your career progresses, and ambitious, instead of being in charge of completing tasks, you are now managing people. Unfortunately all people do not behave the same way. How do you manage people, how do you form a team, how do you organize a crew, how do you align goals and expectations and their skills and to complete the work? In management, it is about motivating and teaching and less involvement with those technical skills and more involvement in soft skills which is a misnomer because they are the hardest things to learn. They are the things that separate the people and the businesses that are successful from the ones that are mediocre and fail. It is how the leaders manage their people. I had mentors and did a lot of reading, and experience what works and what doesn't work.

The second gap was when I wanted to run the business, I needed to speak a different language, and I need to understand accounting and finance. There are parts of finance that you need to understand. If you are going to lead a business, you need to convince related businesses that you know what you are doing. To speak intelligently to insurance companies you have to understand risk. You need bankers to give you the money you need to grow. I addressed that by going back and getting more education. One of the best ways to leap frog yourself is going back to get the education. If you can talk to that banker, if he

knows you understand how the business flows, how the cash flows, if you know where you are making money and where you have challenges, they are going to help you build your business.

Dale Norquist

I had a lot of gaps to fill. I grew up with intense curiosity. I grew up with four sisters, three were valedictorians. I was B and C student. I was curious and taught myself a lot of things. I continued that at Dunwoody and through my whole career just wanting to understand how things work. When I went to Dunwoody, I had to choose between engine mechanics and electronics. I picked something I knew nothing about, electronics. I wanted to understand how radios and TV's worked. If you have a curious mind and continue to learn, you will stay relevant.

After Dunwoody, I did not go to college. I did go to Stanford for a Mini MBA immersion program. I was exposed to operations, marketing, sales and finance and all that did was open the door for fundamental knowledge to build on. I spent my career building on what I learned about balance sheets and income statements and cash flow analysis. The business school I went to was business.

Those that continue to invest in themselves will excel in life. They will have a broad base of experience and can relate to a lot of things. I have composite engineers, material engineers, mechanical engineers, sales people, operations people; I have to talk in those different languages. When you run the company, you have to talk in all of those different languages, carry on conversations and lead those people. You are putting on different hats all day long as opposed to a mono vision view of the world.

ADVICE TO EDUCATORS

Ted Ferrara

To you and to your students, quoting Winston Churchill: 'this is not the beginning of the end; it is the end of the beginning.' Once you have your degree and graduate you will have a life time of learning. Education for your country is too important to be left to the academics so the closer we can work together across our society the more likely we are to be successful.

We have to know we cannot stay insulated and be critics. We have got to work together so what people are learning is what you as academics know they need to learn to be educated people; but that the education is also responsive to the market. We live in a country where what we do, defines who we are. This is a country of work. What you do for a living is a defining element and an important element for defining success. The education system can't prepare only for a vocation. It is not sufficient but it is necessary. Thankfully the message is out there.

Ray Newkirk

It is important to develop team work. With things moving as fast as they do today, we rely on the employees working collaboratively. Our time frames are compressed to such a degree we can't have someone going off working by themselves. We need to work as a team. We work hard at finding the right employees to work as a team. In today's market place the value of a student is higher if they can work well with other people.

Mike Hansen

When I reflect on my educational career, I learned from those in the front of the room and from my classmates. With more education online, I want to make sure that we keep the opportunities to collaborate. If it becomes a two-way exchange and there isn't time for that student and interaction among the students, we will lose. People will not show up with the collaborative skills and the social skills to move ahead. There is progress being made. We use online to educate but we set up a time to get everybody together physically or an online discussion.

Dale Norquist

There has to be continued change. Change has speeded up. Where curriculum did not have to change fifty years ago, now there might be a program that lasts five years may not be relevant to business any more. Technical education is a reflection of business so you have to keep that at the top of your mind. I know in business, people want to hold on to the past. You have a product that always made you money and you never want to let it go. The business starts to erode and you held it too long.

You have to give-up things even before their end of life and go on to the next thing. I know Dunwoody has made a lot of changes in their programs. They have sped up the time to change. I know they align programs to businesses. There is a sewing program because there is a need for sewing. We have a strong technology base in this area. Programs that align with medical technology are going to be important. Take the same program, but put three months on the program positioned for the medical technology companies. That will be a winning program. Just like businesses have to change, I think curriculum at its best is two to three years behind business, if you are up to date. If you are not up to date you are going to be ten years behind business. Keeping that gap close and concise will be the challenge.

Rich Wagner

The best model for technical education comes from industry, and we are connected to industry.

“10 Trends Transforming Technical Education of Tomorrow”

Keynote, March 26, 2014

Jack Uldrich

“We are at the lower left hand part of the curve of these 10 trends that will transform technical education. They will grow exponentially or double every 4 to 24 months. The technology is here today.”

1. **Wearable technology.** *Google Glass in 2014 is a commercial product. Google Glass will transform education and the workforce. Information will be called up as needed. Surgeons will wear google glasses for remote consultation, transforming medical education.*
2. **3 D Printer.** *3 D printers will have an environmental impact and an impact on production savings. Nike has printed a shoe; the process reduces waste by 80%. GE is printing aircraft engine parts—moving from 18 parts to 1. China has a 12 meter 3D printer. They are printing wings and fuselage parts. NASA printed a fuel injection part. Boston Consulting predicts 30% of the jobs lost (in manufacturing) may come back due to 3 D printing. 3D printing converged into Oculus RV will move ideas to prototype to print—that is today*
3. **Exponential growth.** *TExponential growth affects each of these trends. Imagine a Minnesota lake in June—any size—with a lily pad that every day doubles. On June 20-- .1%, one tenth, of the lake is covered with lily pads. By June 25, 3 % of the lake is covered, on June 29, 50% is covered. On the last day of June, June 30, the lake is totally covered with lily pads. Technical education is at day 20 on these trends. The changes are just ahead of us. Examples of exponential growth we have experienced are: six years ago there were no APPs, now a 1 Million Apps; and eight years ago—the United States was not a net producer of energy—technological advances in fracking has produced more oil and natural gas.*
4. **Nano technology.** *Material science will transform industries. From the early 2000’s, the nanotech industry has grown from \$100 M industry, to a \$5B industry and predicted to be \$100B by 2020. Nano sensors in the blood stream, smaller than a grain of sand, will alert the patient of the conditions for a heart attack through with a ring tone on his or her phone.*
5. **Robotics.** *Use of robots is doubling every year. Drone technology is robotics. Amazon package delivery, Fed Ex, realtors and agriculture will use robots and drones. The Google robotic car is legal in California, Florida, Nevada and soon Michigan. There will be a world wide web for robotic technology—robots communicating with each other to learn and share, working with each other.*
6. **Sensors chips.** *Internet of things is possible because of sensors. By 2020 50 billions of objects will be connected to the internet. Right now, billions of sensors are embedded in the concrete in the bridge rebuilt in Minneapolis. The sensors connect the bridge to the internet. Trees will talk to networks on climate change; cars will talk to stop lights and to roads. This is 6 years out.*
7. **Computer processing power.** *The famous IBM computer, Watson, will be replaced by Recon 2020. Recon will have exponentially more powerful simulations. The iPhone will be 1000 times more powerful, Siri will get smarter—the phone will anticipate what we want or need to know.*
8. **Big Data.** *Big data is the collection and connection of data. Amazon’s plan is to deliver anything you want on earth. Google, Amazon, Facebook, all are harvesting data and making connections.*
9. **Shared economy.** *Uber (car sharing) and AirBnB (room sharing) are examples of the success of a business that facilitates sharing each other’s resources. Results for technical education might be the number of auto’s drop, and fewer hotels built.*
10. **Coursera, open source education.** *Udacity, open online course university, sees the next opportunity is in technical education through the Open Ed Alliance—working with businesses to bring cutting edge technology training to employees by harnessing new platforms.*

Futurist Jack Uldrich served in Governor Jesse Ventura’s administration in the office of strategic and long range planning. He served as a Naval Intelligence Officer, from 1987 to 1990. Jack holds degrees from Drake University and University of Minnesota. He is the author of several books on the future.

Summary by Sandra Krebsbach Ph.D.



AMERICAN TECHNICAL EDUCATION ASSOCIATION – ATEA
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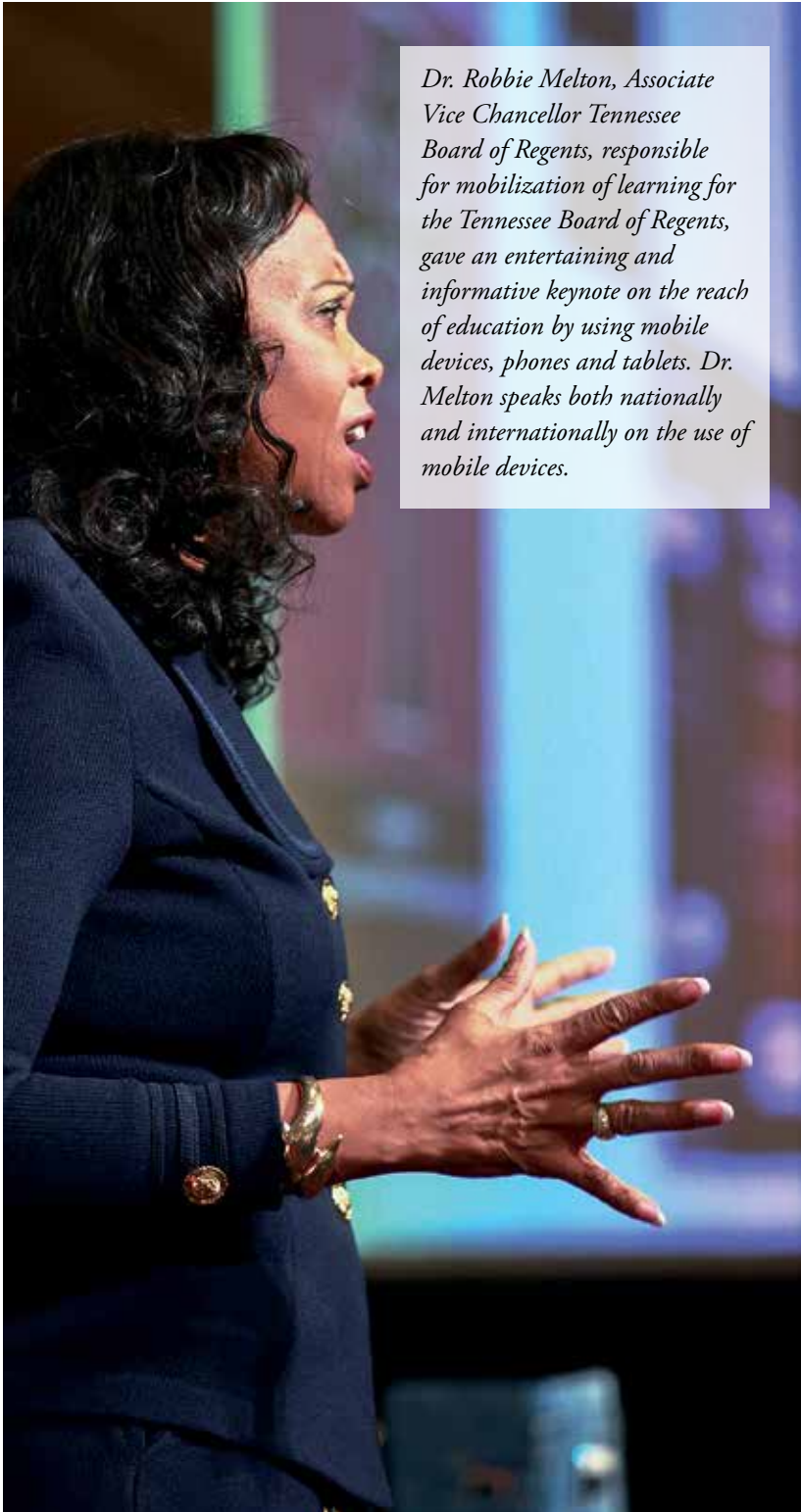
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“Globalization of Learning through Mobile Devices”

Keynote, March 27, 2014

Dr. Robbie Melton



Dr. Robbie Melton, Associate Vice Chancellor Tennessee Board of Regents, responsible for mobilization of learning for the Tennessee Board of Regents, gave an entertaining and informative keynote on the reach of education by using mobile devices, phones and tablets. Dr. Melton speaks both nationally and internationally on the use of mobile devices.

I am 62 years old, lived from bookmobile, a truck with a few books, to an app with 1.5 million free books. Tennessee vets 50,000 apps for 125 subjects for Smart phones and iPads. It started in 2010 when Apple asked Chancellor Montgomery and James King, Vice Chancellor for the Tennessee College of Applied Technology (TCAT) if they could get 100 instructors to test an iPad in terms of teaching and learning and workforce development. James King said ‘yes.’

Three years ago Tennessee tested a blood pressure device that was used with an iPad (mobile device) to measure blood pressure. (ATEA member spot light 2012). iHealth will check oxygen in your blood” That was the beginning of Tennessee being a beta tester site for new devices and apps.

Pull out those mobile devices. *Students do not write, they click, they pull it in, and then they use it for learning. Prepare faculty for the new mobile world. Sesame Street has transformed—the characters use apps. Toddlers in diapers can find their song on an iPad. In education, we need a strategic plan. We need to know when students should be on the devices and how long. Instead, we are sitting back wondering should we have mobile devices?*

There is a mobile workforce using technology. There are four generations in the workforce, Traditionals, Boomers, Gen X, and Millennials. This corresponds to: write me, call me, email me, text me; and Pinball, Pong, Nintendo, and Wii. The mobile workforce means, work will have no boundaries, work from anywhere. How will we manage? From 2014 to 2016, 93% of the growth in the workforce will come from age 55 and older. By 2030 16 million baby boomers will retire.

The goal is to train faculty to look at the new technology and uses of technology. Coming changes are: transactions through Google wallets, using a phone to grab information from posters and walls. Using a Samsung, I grabbed a song from the wall at

the Boston Logan Airport. Will students walk down the hall and have information jump in their phone. Consider the use of iPad's in restaurants in the airports. Think about using iPads for recruiting.

We use only 5% of our mobile tools for education and workforce development. We need to get beyond Angry Bird and Candy Crush. Game Apps are changing education and workforce development.

Tennessee System curates Apps. In Tennessee we see it and say, 'Bring it in to see how we can use it for teaching and learning.' Use the technology and give us feedback. Tennessee is a beta tester for many companies. Students bring your own device. We look at all accessories. Watches are the new phones; you can even stream from the watches to the big screen.

But these are not phones they are dynamic teaching tools. If you own a phone you own a high end medical diagnostic device. The Science Coalition Innovators, Dr. Aydoban Ozcan UCLA, professor of Medical Engineering, (video clip), brings micro analysis tools to locations where there are no hospitals. The health care workers can use their cell phones as microscopes. You can add lenses to the cell phone to turn it into a microscope, telescope, or with an accessory it turns into a stethoscope. You can do an ultrasound with your phone. Add lenses for an eye exam.

The above excerpts were from the entertaining and informative keynote address delivered by Dr. Robbie Melton, Associate Vice Chancellor Tennessee Board of Regents. Discussing the topic of the reach of education by using mobile devices, phones and tablets, she stated that the Tennessee system of higher education is "The number one system for mobilization."

Dr. Melton showed a video of Dr. Lawrence Bonasser, Ph.D. Associate Professor, Biomedical Engineering, Cornell University that documented a process for 3 D Printing turning living cells in material that can be used to reconstruct tissue. The example was building a new ear. The process starts with a 3 D image of the head, maps out the typology of the ear. The "ink" for the printer contains living cells, it is alive when it goes into the printer and alive when it comes out. The printer can make geometries that cannot be made any other way. It can layer and put cells next to each other that create the complex organs that make up our bodies. After two months in an incubator there is the cartilage of an ear for implanting. The implants grow inside the body or out of the body. The body accepts these materials as part of the body. A giant 3 D concrete printer can build a 2500 square foot house in 24 hours. The printer is at the University of California Los Angeles.

Sensordrone by Ensorcon, is a portable, wearable, programmable, sensing computer to collect environmental data, through Apps. It measures gas concentrations and air quality. Apps on devices can check blood alcohol level by blowing in the phone. Bracelets for an EKG reading. iFork, weighs the amount of food on the fork and how fast it is moving.

There is a Dog communicator app. *In the audience, Marty Brown, Cloud Peak Energy, Gillette Wyoming, has one for his dog.* The dog will text him when he leaves the house. This app has transformed the training of dogs for law enforcement and serving the disabled.

The new workforce will be using the mobile technologies. Wearing Google glass Robbie showed a video of how fire departments using Google glass can find a hydrant; bring up the floor plan of a house or a diagram to show where to cut a vehicle to rescue the person from a burning car.

Google glass may be "brand new but out of date" for some things. It may be contact lenses that provide the information. There are contact lenses that can measure blood sugar level through tears for diabetics.

Children's PJ's with bedtime stories. What about teacher clothes, wave your cell phone over your teacher and a couple of math problems pop out.

Dr. Melton ended with two music examples. Vice Chancellor King played on a invisible keyboard above an iPad, and going to NCAA website. Dr. Melton held her iPad in front of University of Tennessee licensed T-shirt, it the Tennessee Volunteers fight song.

Tennessee Board of Regents has a plan, they allow faculty to investigate and to give feedback to find ways to use mobile devices for teaching and learning and workforce education.

It is all about, possibilities...possibilities.

Full keynote with PowerPoint slides and videos on ATEA YouTube channel AmericanTechEdAssc

“New Technologies Across Technical Programs”

March 28, 2014



James Retka
Dean, Workforce & Economic Development, Northland Community & Technical College, Thief River Falls Minnesota



Mac Cameron
Associate Applications Engineer Stratasy, Eden Prairie MN, 3 and 4 D Printing



Moderator, Dr. James Sherrard
Chair Nuclear Programs, Three Rivers Community College, Norwich CT



Robbie Melton
Vice Chancellor of Mobilization and Emerging Technology, Tennessee Board of Regents, Nashville, Tennessee



E.J. Daigle
Dean of Robotics and Manufacturing, Dunwoody College of Technology

JAMES RETKA

What is so scary about drones?

Technical education looks to the future, asks what does it mean and how do we integrate the new technology in to our programs. One example is drones or Unmanned Aerial Vehicles (UAV).

In a small city in northwest Minnesota, six hours from the Twin Cities of Minneapolis and St. Paul, James Retka and his faculty in 2009 were aware the future would impact their program on Airframe and Power Plant Maintenance and it would be here sooner than they thought. “We knew the next generation of flight was coming,” said Retka.

They looked to alliances with the University of North Dakota and to the Grand Forks Air Force base that has the mission of protecting the northern border using the General Atomics Predator.

In October 2009 Northland Community and Technical College applied for a \$5Million grant from the Department of Labor, through the American Recovery and Investment Act (ARRA). It was awarded in March 2010 to develop a program in Unmanned Aerial Vehicle Maintenance (UAV). “At the time we received the grant we were the tip of the spear, not knowing what would be the curriculum; what did industry need; and what would be the regulations; and what would be the standards for this UAV technician.”

“We needed a person who did not currently exist, an airframe and power plant mechanic, a computer programmer and someone who understands satellite and ground control stations-- a “Mech-Tech.” Northland did it by convening a summit with a combination of funds from their grant and from the college resources. Northland collaborated with the National Center for Aerospace and Transportation Technologies (NCATT) housed at Tarrant County College in Fort Worth, Texas. NCATT worked with Northland to suggest the final invitee list which included several related program faculty from Northland.

The three day summit included OEM’s General Atomics Aeronautical Systems, Lockheed Martin, Northrop Grumman, and government and military branches as well as higher education partners. The summit produced the framework for which lead to an 18month process that resulted in the creation of an industry-validated UAS maintenance standards and an accompanying high stakes examination for the new UAS technician.

With part of the grant funds Northland College acquired a UAV from the Israeli’s in 2012. Since then, Dean Retka has led the creation of an Imagery Analysis certificate and Geospatial Intelligence AAS, the first in at a two year college in the country.

Update: Northland UAS, Unmanned Aircraft Systems, received approval April 2014 from the Federal Aviation Administration through a Certificate of Authorization (COA) to fly the UAV in Roseau county in northwestern Minnesota to collect information for precision agriculture applications.

James Retka, Dean, Workforce & Economic Development, Northland Community & Technical College, Thief River Falls Minnesota

MAC CAMERON

3 and 4 D Printing

Mac is a recent graduate of the University of Minnesota with a BS in Physics. During his time at the U he used 3 D printers both designing products and doing research. He currently works at one of the largest 3D printing companies in the world, Stratasys.

Stratasys invented and commercialized fused deposition modeling technology—the most popular additive manufacturing technique in over 20 years. It works by melting small strings of plastic onto a surface into different shapes, then melting more layers on top of them to create objects—layer by layer. Since its invention, this technology has been adopted and widely used in automotive, aerospace, consumer and defense products, medical devices, gigs and fixtures, molds, teaching aids and more.

Mac is currently working on a project at the U of M called “The Anatomy of Success” to revolutionize how medical models are made. The 3D printed medical models and master patterns are allowing medical professionals and students to practice incisions and tracheotomies on realistic models. The process starts with a MRI or CT scan of a person. Then a CAD model is segmented into different tissues to characterize which material is for printing and from there the file can be printed. This process was used to print an anatomically correct spine with flexible disk plates in a single build.

Applications of 3D printing are growing quickly. From architecture and civil engineering to shapes and designs in art, jewelry, interior fills, and in films including Iron Man, Star Trek, Avatar, Jurassic Park.

The future for 3 and 4 D Printing

- 4 D Printing is the ability to print models that change with time. As the medium changes, the model adapts to the environment without electronics to activate it.
- Additive manufacturing distributes carbon atoms and creates materials that are stronger. Material science will redesign products, interior structure to be lighter and just as strong with honeycombed structures within the parts.
- Speed, 3 D printing increases the speed with which large scale and interior structure can be produced.
- Large 3 D printing of a concrete house.
- Nano scale to rebuild organs from DNA for future organ generation for transplants.
- Intelligence at a nano scale, atoms will configure themselves.
- Power generation, structures that move without the use of power
- 3 D and 4 D printing will continue to thrive.

Mac Cameron, Associate Applications Engineer Stratasys, Eden Prairie MN, 3 and 4 D Printing

DR. ROBBIE MELTON

Technology Mobilization

There is a mobile workforce. The majority of today’s workforce uses a mobile device to check in to work; make a purchase; receive notifications, and if flying, will use the device to check-in at the airport.

Tennessee Colleges of Applied Technology have a strategic plan for the mobile workforce that goes beyond Apps. We would like to partner with businesses to be ready for our students to use those mobile devices as workforce tools.

What are the trends to watch? Since 2007 use of social media has dramatically outpaced email and continues to rise. Teenagers use devices to know where their friends are at any given time and can instantly collaborate to solve problems. This will carry into the workplace. Workers will check on who in the area can help, who has parts, create a group to collaborate to solve the problem and it will be in real time. Plus, mobile devices such as smartphones are now being used as workforce tools for businesses, hospitals, marketing, and productivity.

Challenges for business with sharing data and collaborative problem solving will be data protection as relationships and

partnerships change and expand; who has access to data and are they still under compliance restrictions when using the data. Business will be concerned with how to control the data and productivity of employees accessing data outside of their network.

The real opportunity for business is leveraging global technology to positively impact business.

Robbie Melton, Vice Chancellor of Mobilization and Emerging Technology, Tennessee Board of Regents, Nashville Tennessee

E.J. DAIGLE

Robotics across the curriculum and employment sectors

Robots tend machines, move parts from one machine to another and perform very precise manufacturing processes such as welding. The automotive industry has been using robots to weld for well over 30 years. Cambridge Metals and Plastics, uses robots to perform welding processes in a variety of welding cells. Although a robot replaces the actual welder, workers are still needed to fixture parts and inspect the welds. Medical industry, surgeons using a robot control four hands rather than two. Nano--robotics—a robot you ingest—goes after cancerous cell. There are Military uses.

Lights out manufacturing: Fraisa is a manufacturer in Minnesota that produces cutting tools. Ten years ago they had to decide if they would send he jobs to China or go bankrupt. To stay competitive in the industry they incorporated several “lights out manufacturing processes.” During the day machinists set up CNC grinders to make parts autonomously at night. The machinist goes home at the end of the shift and the machines run “lights out” for 16 hours until the next morning.

What has changed?

High school and middle school students build robots to compete. These competitions include design, build and task-based cooperative games where teams score points.

This starts at the elementary school (First Lego League)level using the Lego Mindstorms NXT robotics kit. Middle school students evolve into the FTC (First Tech Challenge) where the processors become more powerful and the technology more advanced. By the time students reach the high school level, they start using state-of-the-art Field Programmable Gate Arrays from National Instruments. These are similar to devices used by NASA on the Mars rovers. Currently the MN First Robotics Competition (FRC) has 20,000 high school kids in Minnesota. The competitions are like rock concerts. Minnesota the “State of Hockey”—last year had more students letter in high school robotics than hockey. Elementary Lego League—they design robots to rescue.

Other robotic activities and competitions are:

Combat Robotics a monthly competition for high school and college students. —it is called Destructive testing with 15 pound robots. The national combat robotics league is sponsored by the NTMA (National tool makers Association).

Institute of Navigation. ION—autonomous snowplow competition. January each year brings the Autonomous Snow Plow Competition where Dunwoody has competed as the only 2 year college. Most recently placing 5th out of 10 teams and winning \$700.

What is next for Robots?

The 21st century will require advanced sensors including machine vision and artificial intelligence. Robots of the 21st century—will be humanoid-like, allowing them to adapt to the human-designed infrastructure around them. Instead of just moving the parts from one station to another, robots will be able to identify problems such as spills or dirt and clean up accordingly. Consumers will be able to purchase add-ons for their robot to do more such as load the dishwasher or use specialized equipment.

E.J. Daigle, Dean of Robotics and Manufacturing, Dunwoody College of Technology

Spring 2014

In the Circle of Professional Colleagues

By: Nasser A. Razek, Ed.D.



Starting my career in post-secondary education in a technical college, I have always had an interest in technical education. Even my first published article was about the changing demographic of student body in two year

colleges. However, this year was my first time to attend a national convention about technical education. In the ATEA National Conference, I found myself in the middle of a wonderful circle of collegial technical education instructors and administrators who are keen about sharing their innovative ideas and best practices with others in the field. I felt their passion about their profession, their dedication to their careers, and their enthusiasm for providing a quality education for the youth responsible for keeping our state of the art production lines up to it global challenges.

I wished I had the ability to attend more sessions of these. However, whenever I was attending one session, I knew I was missing so many at the same time. Moreover, I thought of other members of ATEA who could not attend the conference. How can we share these wonderful presentations? Immediately, The Journal came to my mind as the perfect medium for sharing our best practices. It would make these ideas available for all our members. Therefore, I am reaching out to our presenters to consider sharing their presentations through The Journal as a way of enhancing our professional practice. The process is easy and transparent. Publication guidelines are available on our website at <http://www.ateaonline.org/ATEAJournalGuidelines>. The guidelines provide information regarding the types of manuscripts accepted, the technical requirements of Journal writing, and the criteria for selection. As an editor, I am always available to answer and questions that arise during the writing and submission process.

Submission is a two-step process. The first step is to submit the abstract of your article. This is simply a concise summary of your prospective article. Upon submission, you will get feedback about the topic from the editor within a week. The second step is submitting your full article. Once the article is submitted, it will be blind reviewed by three editorial committee members. They work independently to review your manuscript and use a rubric to evaluate its significance and contribution to postsecondary education; confirm it is scholarly and clearly written, and assure conclusions are clearly drawn and supported.

Upon the blind review results, a publication decision is made. The manuscript may be accepted with no revisions required, conditionally accepted pending editorial comments incorporated, rejected with encouragement to resubmit with major revisions, or rejected. Be sure to address the impact on postsecondary technical education as you craft your manuscript to ensure the relevance of your article to our membership interests. Your success as an author is our goal. In addition to the assistance and suggestions offered in the publication guidelines, members of the editorial committee offer support to potential authors. If you wish, a member of the editorial board will share authorship and work with you to develop or refine a manuscript. We can collaborate from the beginning to craft a manuscript that proudly reflects your research and activities.

I will be looking forward to working with you to share your wonderful ideas with our professional community across the nation.

Nasser A. Razek, Ed.D., Editor of the reviewed and refereed section of the ATEA Journal. Dr. Razek is a clinical faculty, Counselor Education and Human Service, Dayton University, Dayton, OH.

“Reverse Transfer Students and the American Skill Gap”

By: Arrita Summers, Ed.D., Tennessee College of Applied Technology – Crump

Paying attention to manufacturing news, readers are aware that many experts are reporting that the U.S. economy is facing a serious skill gap in technical careers. The reports suggest that an increased number of individuals seeking post-secondary career and technical education will be needed to mitigate the shortage. To fill this skill gap, one might look to an interesting group of individuals; reverse transfer students. These students typically have completed college, or have dropped out of college, and have returned to career and technical education. An overview of the case of these students is outlined here, beginning with a review of the American skill gap that reverse transfer students can help fill; as well as, who these students are and how understanding this unique group of students can benefit our national economy. Utilizing data collected in a recent study of reverse transfer students, demonstrations are made that can shed light on why these students chose a college or university education and then “reverse transferred” back to CTE. Concluding thoughts will point to the need for additional research.

Bobbie Tuberville is a recent Health Information Technology graduate at the Tennessee College of Applied Technology, Crump Tennessee. Tuberville possessed a Master’s degree in special education but enrolled in a one-year Health Information Technology (HIT) program stating, “Due to downsizing, I was laid off from a teaching position. There was only one job opening in my field in my local community and I knew that there were many applicants. Consequently, I was not selected for the position. In the past, I had worked in an eye care clinic and really enjoyed it, so I selected the HIT program and looked forward to working in a medical office setting.” Bobbie’s situation is not uncommon. Career and technical education (CTE) administrators may consider assessing their student enrollment to determine the number of reverse transfer students. Chances are they too will have a large population of these students. With some open discussions, instructors could learn about these students’ perceptions and the best instructional methods to meet their unique needs.

The American Skill gap

There are signs that the U.S. is not preparing workers who will lead the nation to economic success. As a result, a skill gap has developed and America is in need of highly skilled employees who possess CTE knowledge, ability, and mindsets (Harvard

Graduate School of Education, 2011). The Georgetown Center indicates that 13.8 million job openings will be available by 2018 for individuals possessing some college, such as occupational certificates or associate degrees, many in the so called “middle-skill” fields (as cited in Carnevale, Smith, & Strohl, 2010, p. 13).

According to responses of manufacturing executives in a 2011 study of the American skill gap, a moderate to severe shortage of workers who are able to fill the available skilled positions was reported by 67 percent of survey participants; 56 percent of participants anticipated that this number could rise in the coming years (Morrison, et al., 2011). The study demonstrated that the skill gap is only widening. As a result, the U.S. manufacturing industry will continue to lose global effectiveness unless the educational system is able to supply a skilled workforce, especially in occupational areas of production and machining jobs (Morrison, et al., 2011). Manufacturers are looking for new methods of attracting employees to fill these highly skilled positions; they are also looking to legislators and the educational system to meet the American skill gap needs (Morrison, et al., 2011).

Manufacturers further report to national leaders that while unemployment numbers are at a high percentage, manufacturers have the jobs to lower the unemployment rate; what employers do not have are skilled laborers to fill these open positions (Whoriskey, 2012). This is an important message for our legislators. The college-for-all approach, favored by many political leaders, may have raised the academic endeavors of many students. However, the approach has yet to fully consider the outcomes of these students beyond their high school graduation because the focus has been on the students’ plans rather than actual outcomes (Rosenbaum, 2001). A college-for-all approach does not generally meet the needs for many of the manufacturing fields where the open jobs are. Legislators must become aware of research that is demonstrating that “some meaningful education beyond high school” may actually serve students and the current economy better than a college-for-all approach (Education Week, 2011, para.3).

In response to comments made by President Barack Obama (2009) regarding the need for a good education that is able to ensure competitiveness in the global economy, Evans

and Cook (2011) state, “Clearly, if significant changes in public education do not occur to ensure that young people are prepared for both college and work in a global economy, the nation’s social and economic health will continue to weaken” (p. 20). Can the reverse transfer students help close the American skill gap? They are certainly worth assessing to determine if we indeed should change our educational systems to prepare them for college and for work – filling the skill gap as we go.

Who are the Reverse Transfer Students?

Reverse transfer students are a subset of career and technical students who have begun a college education program, or completed a college degree, and then enrolled in a technical program, including technical courses in a community college (Townsend & Dever, 1999). Today, the term “reverse transfer students” is not commonly recognized by many in the educational field. However, as early as 1992, reports showed an increase in transfer student numbers for the previous two decades (Kajstura & Keim, 1992). Reverse transfer students tend to reverse transfer for a variety of purposes: (a) personal reasons; (b) academic difficulty; (c) career change; and, (d) inability to decide on academic/career goals (Kaistura & Keim, 1992). These students are generally older than traditional students enrolling in college immediately after graduating from high school. Further, reverse transfer students recognize that the college experience did not provide for them what they needed and therefore they choose to return to a technical school (Gray, 2008).

To the manufacturing executives and technical education administrators, reverse transfer students may be the best solution for solving the American skill gap puzzle. If the attention of these students can be captured and directed to CTE, without going to a college or university first, then they may fill manufacturing positions in a quicker fashion. In a 2012 press release, the White House suggested that community colleges, including career and technical training, are the major venue for developing highly skilled and high demand workers who will earn degrees, certificates, and credentials, in a period of time of two years or less, which will meet industry needs for the American workforce. President Barack Obama stated, “Now is the time to build a firmer, stronger foundation for growth that will not only withstand future economic storms, but one that helps us thrive and compete in a global economy. It is time to reform our community colleges so that they provide Americans of all ages a chance to learn the skills and knowledge necessary to

compete for the jobs of the future” (The White House, 2010, para.1). Furthermore, in 2012, the White House recognized a lack of a skilled workforce and called for new partnerships between private industry and community colleges as a means of closing the American skill gap (White House, 2012). Given this information, a greater focus on listening to reverse transfer students may help us connect them to the unfilled jobs in the American manufacturing sectors.

What do Reverse Transfer Students Have to Say?

A study of college graduates and college non-graduates who have reverse transferred to a Tennessee College of Applied Technology was conducted to identify their motives for enrollment in post-secondary CTE. Students were asked to complete a survey reporting their thoughts on the value of a college or university education as compared to CTE. The survey assessed attitudinal measures of the reverse transfer students towards CTE as a viable alternative to a college degree.

The population for this work was college graduates and college non-graduates enrolled at the Tennessee College of Applied Technology. Across the state, 24 campuses chose to participate with 903 students demonstrating that they were reverse transfer students who had previously been enrolled in a college or university. To draw conclusions related to the data, two specific inferential tests were employed to assess the data: (a) t-test and, (b) analysis of variance (ANOVA).

Descriptively, females reverse transfer students in the study (61%, N = 548) outnumbered the males (39%, N = 353). By age, the majority of the students were over the age of 25 years old (57%, N = 505) while 18-24 year olds tallied 381 (43%). Of the students participating, 27% reported being college or university graduates (N = 244), while 73% were college or university non-completers (N = 650). Students reported that their highest level of college or university enrollment as Associate Degrees (81.1%, N = 708), Bachelor Degrees (16.49%, N = 144), and advanced degrees (2.4%, N = 21).

While the reverse transfer students had much to say, four points are noteworthy here due to their perceptions surrounding college attendance and the American skill gap. Specifically, reverse transfer students reported plans to bridge back to a college or university; that they do possess knowledge of the American skill gap; possess a belief that CTE is better at preparing them for the workforce; and, possess a belief that CTE is a worthwhile alternative to a college education.

Bridge to College

Results demonstrated that a difference exists between the college graduates who do not plan to return to college and the college non-graduates who plan to bridge back to college. Students who had obtained a degree from a college or university ($M = 3.80$, $SD = 1.20$) reported significantly lower levels of believing that their technical education would serve as a bridge to college than did respondents who had not earned a degree ($M = 4.01$, $SD = 1.10$), $t(861) = -2.48$, $p = .003$, significant at the $p \leq .01$ level.

Females ($M = 4.16$, $SD = 1.20$) reported significantly higher levels of anticipation for bridging to college from technical education than did males ($M = 3.61$, $SD = 1.22$), $t(867) = -7.16$, $p = .000$, significant at the $p \leq .000$ level. These results of a difference between the lower number of males considering a return to the college or university setting as compared to females considering a similar return may be further tested to determine why this is the case. Early results may be related to the high number of female students who are enrolled in Practical Nursing programs intending to follow up with RN education as opposed to males studying in technical programs for which college courses are not applicable.

Reverse transfer students, who were between the ages of 18- 25 ($M = 4.11$, $SD = 1.05$), reported significantly higher levels of belief that technical education provided them with more than skills and job opportunities. They reported that it would also serve as a bridge to college as they plan to return to finish their college degree, than did students who were over the age of 25 years ($M = 3.83$, $SD = 1.18$), $t(853) = 3.55$, $p = .001$, significant at the $p \leq .001$. As the two age groups showed a statistically significant difference, students who graduated more recently reported a greater likelihood of returning to college than did the older students. This may indicate that older students have set their mind on a career path and are investing themselves in it.

Workforce Skill Gap

Males ($M = 4.01$, $SD = .83$) reported significantly higher levels of believing that the American job market was facing a moderate to severe skill gap in skilled and technical fields than did female respondents ($M = 3.65$, $SD = .83$), $t(892) = 6.28$, $p = .001$, significant at the $p \leq .001$ level. This difference, between the lower numbers of females who consider the American job market as facing a moderate to severe skill gap in technical fields as compared to their male counterparts, may be related to the fact that females are generally nontraditional students in careers related to CTE.

Better Preparation by CTE

Males ($M = 3.79$, $SD = .95$) also reported significantly higher levels of believing that technical education better prepares individuals for employment in the current American economy when compared to a college education than did female respondents ($M = 3.45$, $SD = 1.03$), $t(868) = 4.88$, $p = .002$, significant at the $p \leq .01$ level. This may demonstrate a difference between the lower numbers of females who trust that a technical education will better prepare them for employment as compared to males who have a greater anticipation of employment as a result of their technical education. As with the understanding between males and females of the workforce skills, these results may be related to the fact that females are generally nontraditional students in careers related to the skill gap.

CTE as a Worthwhile Alternative

Additional testing was conducted to test the effect of the respondent's program of study upon their beliefs that a technical education was a worthwhile alternative to a college education. There was a significant effect of program of study, $F(7, 857) = 2.44$, $p = .018$, $p \leq .05$ level. Using Scheffé post hoc criterion for significance, further analyses were performed to assess multiple comparisons with no statistical differences noted. Therefore, the more liberal Least Significant Difference (LSD) test was performed. Program homogeneous subsets of students demonstrated that technical education was a worthwhile alternative: Information Technology ($M = 4.31$), Architecture and Construction ($M = 4.29$), Human Services ($M = 4.18$), Manufacturing ($M = 4.17$), Communication ($M = 4.15$), Business ($M = 4.12$), and Transportation ($M = 4.11$). The Health programs of study reported a lower mean ($M = 3.99$) than the remaining programs. Results suggest that student program of study had an effect on how reverse transfer students viewed technical education as a worthwhile alternative to a college education with the majority of programs reporting that they agreed, while students in health related programs had no opinion.

Reverse Transfer Students and the Need for More Research

Literature and research has clearly demonstrated that a skill gap exists in the American workforce with a large number of technical positions going unfilled despite the high unemployment rate. Additional research can be performed on reverse transfer students to identify potential issues that arise when high school graduates are directed primarily to a college path when a technical path may be better served, i.e. a study of

promoting a “college for all” platform as opposed to a “post-secondary for all” platform.

Detailing the plight of the neglected majority, Parnell (1985) described the American educational system as placing a high level of its time and resources on two segments of their enrollment: those with the highest expectations for academic success and those with the least expectations for academic success neglecting the majority where CTE students generally fall. Parnell went on to question what could happen if more emphasis were placed on helping all students, including the middle students, the neglected majority, to perform at their best even if they do not aspire to a college degree.

Considering the skill gap and Parnell’s call for helping the middle students including technical education students, the high number of reverse transfer students may warrant further research. Notably, reverse transfer students enrolled in Allied Health career programs should be assessed to determine a greater understanding of why they enrolled in CTE in such large numbers; their lowered perception that CTE is a worthwhile alternative to a college education; and, why they have such a high belief that they will return to college to complete a degree. Secondly, further investigation is needed into perceptions of the male and the female reverse transfer student about the American skill gap and whether or not CTE better prepares students for the current economy, as results showed statistically significant differences of opinion.

Conclusion

Past research has not fully addressed how, or if, reverse transfer students have affected the American technical skill gap. Literature has shown that without an increased number of students pursuing CTE the American skill gap will continue to widen. On the other hand, if students pursue CTE, they may find rewarding careers, especially in the manufacturing sectors. Overall, students reported that among their reasons for enrollment were that they plan to bridge back to a college or university; that they possess an understanding of the skill gap; that CTE may be better preparing them for the current economy; and that CTE is a worthwhile alternative to a college education. Taken as a whole, this body of research gives hope to the future of career and technical education with anticipation that it will continue to meet the needs of reverse transfer students.

Dr. Summer’s photo page 11 upper left

References

- Carnevale, A. P., Smith, N., & Strohl, J. for Georgetown University Public Policy Institute, Center on Education and the Workforce. (2010). *Help wanted: Projections of jobs and education requirements through 2018*, 13, 106. Washington: Georgetown University. Retrieved from <http://cew.georgetown.edu/jobs2018/>
- Education Week, & Editorial Projects in Education Research Center. (2011, June 7). *National Graduation Rate Rebounds; 1.2 million students still fail to earn diplomas* para.3. Retrieved from http://www.edweek.org/media/diplomascount2011_pressrelease.pdf
- Evans, T., Cook, H. (2011, Fall). College readiness and workforce challenges. *Principal Leadership*, 11(6), 20-25. Retrieved from ERIC database EJ916321.
- Gray, K. C. (2008). *Getting real: Helping teens find their future*, 24. Thousand Oaks, CA: Corwin Press.
- Harvard Graduate School of Education. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st Century*. Retrieved from http://www.gse.harvard.edu/news_events/features/2011/Pathways_to_Prosperty_Feb2011.pdf
- Kajstura, A., & Keim, M. (1992). Reverse transfer students in Illinois community colleges. *Community College Review*, 20(2), 39–44. doi:10.1177/009155219202000205
- Morrison, T., Maciejewski, B., Giffi, C., DeRocco, E. S., McNelly, J., & Carrick, G., for Deloitte & The Manufacturing Institute. (2011). *Boiling point? The skill gap in US manufacturing*, 2. Retrieved from <http://www.themanufacturinginstitute.org/-/media/A07730B2A798437D98501E798C2E13AA.ashx>
- Obama, B. (2009). Remarks of President Barack Obama—As prepared for delivery: Address to joint session of Congress. Retrieved from www.whitehouse.gov/the_press_office/Remarks-of-President-Barack-Obama-Address-to-Joint-Session-of-Congress/
- Parnell, D. (1985). *The neglected majority*, xi, 54-56. Washington, DC: Community College Press.
- Rosenbaum, J. E. (2001). *Beyond college for all: Career paths for the forgotten half*, 107. New York, NY: Russell Sage Foundation.
- The White House. (2010). *Building American skills by strengthening community colleges*. Washington, DC: Government Printing Office. Retrieved from <http://www.whitehouse.gov/sites/default/files/uploads/White-House-Summit-on-Community-Colleges-Fact-Sheet-100510.pdf>
- The White House. (2012, February 24). *VP Joe Biden, Dr. Jill Biden, and Sec. of labor Hilda L Solis announce availability of \$500 million to fund partnerships between community colleges and businesses to train workers with skills employers need* [Press release], para.3. Retrieved from <http://www.whitehouse.gov/the-press-office/2012/02/24/vice-president-joe-biden-dr-jill-biden-and-secretary-labor-hilda-l-solis>
- Townsend, B. & Dever, J. (1999). What do we know about reverse transfer students? *New Directions for Community Colleges* 106, 5-7.
- Whoriskey, P. (2012, February 19). U.S. manufacturing sees shortage of skilled factory workers. *The Washington Post*. Washington, DC. Retrieved from http://www.washingtonpost.com/business/economy/us-manufacturing-sees-shortage-of-skilled-factory-workers/2012/02/17/gIQAo0MLOR_story.html



What is the American Technical Education Association?

ATEA is an autonomous, non-affiliated international association devoted solely to the purposes of postsecondary technical education. It is an organization dedicated to excellence in the quality of postsecondary technical education with emphasis on professional development. ATEA is a driving force behind workforce development.

ATEA was founded in Delmar, New York in 1928 and incorporated as a non-profit professional education association in 1960. In 1973 the national headquarters moved from New York to Wahpeton, North Dakota to the campus of North Dakota State College of Science. In 2012 the national office moved to Dunwoody College of Technology, a private non-profit technical college founded in 1914 in Minneapolis.

American Technical Education Assn.

Dr. Sandra Krebsbach
Executive Director, ATEA

skrebsbach@dunwoody.edu |
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Mission:

The American Technical Education Association (ATEA) is a leading association for the postsecondary technical educator with emphasis on professional development. The organization is dedicated to excellence in quality of postsecondary technical education focusing on practical teaching ideas and best practices. ATEA recognizes outstanding performance and leadership and provides a network for career connectivity.

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Oct. 9-10
- 2015---Southeast Technical Institute
Sioux Falls SD
- 2016---Mid-Plains Community College
North Platte NE
- 2017---Minnesota State College
Moorhead MN

Region 6

- 2014---Northwest Region Leaders
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Silver: \$2,000

Events and reception sponsorships available.

Contact the national office at 612.381.3315 or
info@ateaonline.org for more information or go
to ateaonline.org under Trade Show.



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To Contact the National Office call **612.381.3315** or **info@ateaonline.org**

SAVE THE DATE

April 15-17 Indianapolis, Indiana



Tom Snyder, President of Ivy Tech Community College invites you to
ATEA's 52nd national conference on technical education

Trade Show and conference save the dates April 15-17